

1 **THE EMBODIMENTS OF THE INVENTION FOR WHICH AN**
2 **EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS**
3 **FOLLOWS:**
4

5 1. A desanding vessel for removal of particulates from a fluid stream
6 containing particulates, comprising:

7 a fluid inlet adjacent a first end of the vessel and adapted for receiving
8 the fluid stream, the fluid inlet discharging the fluid stream at an inlet velocity into a
9 freeboard portion at a top of the vessel, the fluid stream in the freeboard portion
10 having an elutriation velocity less than the inlet velocity and such that contained
11 particulates have a fall trajectory;

12 a fluid outlet from the vessel, the outlet being spaced horizontally from
13 the inlet; and

14 a flow barrier depending from the top of the vessel and having a lower
15 edge so as to direct the fluid stream below the barrier before discharge from the
16 outlet port for maintaining the freeboard portion above the lower edge and forming a
17 belly storage portion below the lower edge, the flow barrier being positioned
18 between the fluid inlet and fluid outlet and the flow barrier being spaced from the
19 fluid inlet so as to enable the fall trajectory of a substantial amount of the particulates
20 to intersect the belly portion so as accumulate particulates in the belly portion prior to
21 the flow barrier wherein the fluid stream at the fluid outlet is substantially free of
22 particulates.

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1 2. The desanding vessel of claim 1 further comprising a cleanout port
2 for periodically accessing and removing particles accumulated in the belly portion.

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4 3. The desanding vessel of claim 1 wherein the flow barrier is spaced
5 from the fluid outlet.

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7 4. The desanding vessel of claim 1 wherein the flow barrier further
8 comprises a plate having a substantially horizontal lower edge and the fluid outlet is
9 located in the freeboard volume adjacent to the flow barrier opposite the fluid inlet.

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11 5. The desanding vessel of claim 1 wherein the flow barrier is formed
12 by the fluid outlet, the fluid outlet further comprising a tubular portion extending
13 downwardly through the freeboard portion for forming the flow barrier and
14 terminating at the lower edge.

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16 6. The desanding vessel of claim 1 wherein the vessel is cylindrical
17 having a substantially horizontal axis, a top wall and a bottom wall.

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19 7. The desanding vessel of claim 6 wherein the cylindrical vessel has
20 a first end and a second end, and wherein the inlet port is located at the first end and
21 discharges the fluid stream into the freeboard portion along a fluid path which is
22 substantially parallel to the vessel's axis.

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1 **8.** The desanding vessel of claim 7 wherein the inlet port is offset
2 above the vessel's axis.

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4 **9.** The desanding vessel of claim 7 wherein the inlet port further
5 comprises:

6 an inlet flange;

7 a nozzle forming the fluid inlet; and

8 a nozzle flange for releasably connecting to the inlet flange.

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10 **10.** The desanding vessel of claim 7 wherein the inlet port further
11 comprises an eccentric fitting positioned between the vessel and the inlet flange for
12 aligning the nozzle offset above the vessel's axis.

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14 **11.** The desanding vessel of any of claims 7 to 10 wherein lower edge
15 of the flow barrier depends below the inlet port.

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1 **12.**The desanding vessel of claim 7 wherein the inlet port further
2 comprises:

3 a first connection at the first end of the vessel,

4 a second connection adapted for releasably and sealingly connecting
5 to the first connection, the second connection further comprising a nozzle extending
6 through the second connection, the nozzle having

7 a first end adapted for connection to the source of the fluid stream, and

8 a second end protruding into the vessel for discharging the fluid stream
9 and particulates into the freeboard portion spaced inwardly from the first end.

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11 **13.**The desanding vessel of claim 12 wherein lower edge of the flow
12 barrier depends below the inlet port.

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14 **14.**The desanding vessel of claim 7 further comprising a cleanout port
15 for periodically accessing and removing particles accumulated in the belly portion
16 further comprising:

17 a cleanout connection at the second end of the vessel and aligned with
18 the belly portion; and

19 a cleanout cover for coupling with the cleanout connection and
20 operable between a sealed position and an open position for permitting removal of
21 particulates from the belly portion.

22

1 **15.** The desanding vessel of claim 14 further comprising
2 means for isolating the vessel from the fluid stream and de-
3 pressurizing the vessel before opening the cleanout port.

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5 **16.** The desanding vessel of claim 15 further comprising:
6 means for de-pressurizing the vessel before opening the cleanout port.

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1 17.A desanding system for adaptation to an existing wellhead having a
2 fluid stream flowing to downstream equipment and for the removal of particulates
3 from the fluid stream, comprising:
4 a vessel positioned between the wellhead and the downstream
5 equipment for intercepting the fluid stream;
6 a structure for supporting the vessel relative to the wellhead and
7 downstream equipment, wherein
8 the vessel comprises a fluid inlet adjacent a first end of the vessel and
9 adapted for receiving the fluid stream, the fluid inlet discharging the fluid stream at
10 an inlet velocity into a freeboard portion at a top of the vessel, the fluid stream in the
11 freeboard portion having an elutriation velocity less than the inlet velocity and such
12 that contained particulates have a fall trajectory, a fluid outlet from the vessel, the
13 outlet being spaced horizontally from the inlet; and a flow barrier depending from the
14 top of the vessel and having a lower edge so as to direct the fluid stream below the
15 barrier before discharge from the outlet port for maintaining the freeboard portion
16 above the lower edge and forming a belly storage portion below the lower edge, the
17 flow barrier being positioned between the fluid inlet and fluid outlet and the flow
18 barrier being spaced from the fluid inlet so as to enable the fall trajectory of a
19 substantial amount of the particulates to intersect the belly portion so as accumulate
20 particulates in the belly portion prior to the flow barrier wherein the fluid stream at the
21 fluid outlet is substantially free of particulates.

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1 **18.**The desanding system of claim 17 wherein the vessel is cylindrical
2 and further comprises
3 a substantially horizontal axis, a top wall and a bottom wall;
4 a first end and a second end, and wherein the inlet port is located at
5 the first end and discharges the fluid stream into the freeboard portion along a fluid
6 path which is substantially parallel to the vessel's axis and offset above the vessel's
7 axis.

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9 **19.**The desanding system of claim 18 wherein the inlet port further
10 comprises an eccentric fitting positioned between the vessel and the inlet flange for
11 aligning the nozzle offset above the vessel's axis.

12
13 **20.**The desanding system of claim 19 further comprising a cleanout
14 port for periodically accessing and removing particles accumulated in the belly
15 portion further comprising:

16 a cleanout connection at the second end of the vessel and aligned with
17 the belly portion; and

18 a cleanout cover for coupling with the cleanout connection and
19 operable between a sealed position and an open position for permitting removal of
20 particulates from the belly portion.

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